

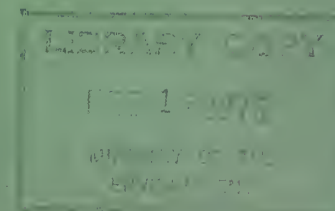
OPERATING SUMMARY

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1973
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BURLINGTON- ELIZABETH GDNS.

WATER POLLUTION CONTROL PLANT

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**TD
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B875
1973**

Burlington ~ Elizabeth Gardens
: water pollution control plant.

81581



MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, CENTRAL REGION
P. Cockburn

MANAGER, UTILITY OPERATIONS
A. Thomas

BURLINGTON-ELIZABETH GARDENS
WATER POLLUTION CONTROL PLANT

operated for

THE TOWN OF BURLINGTON

by the
MINISTRY OF THE ENVIRONMENT

1973 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director



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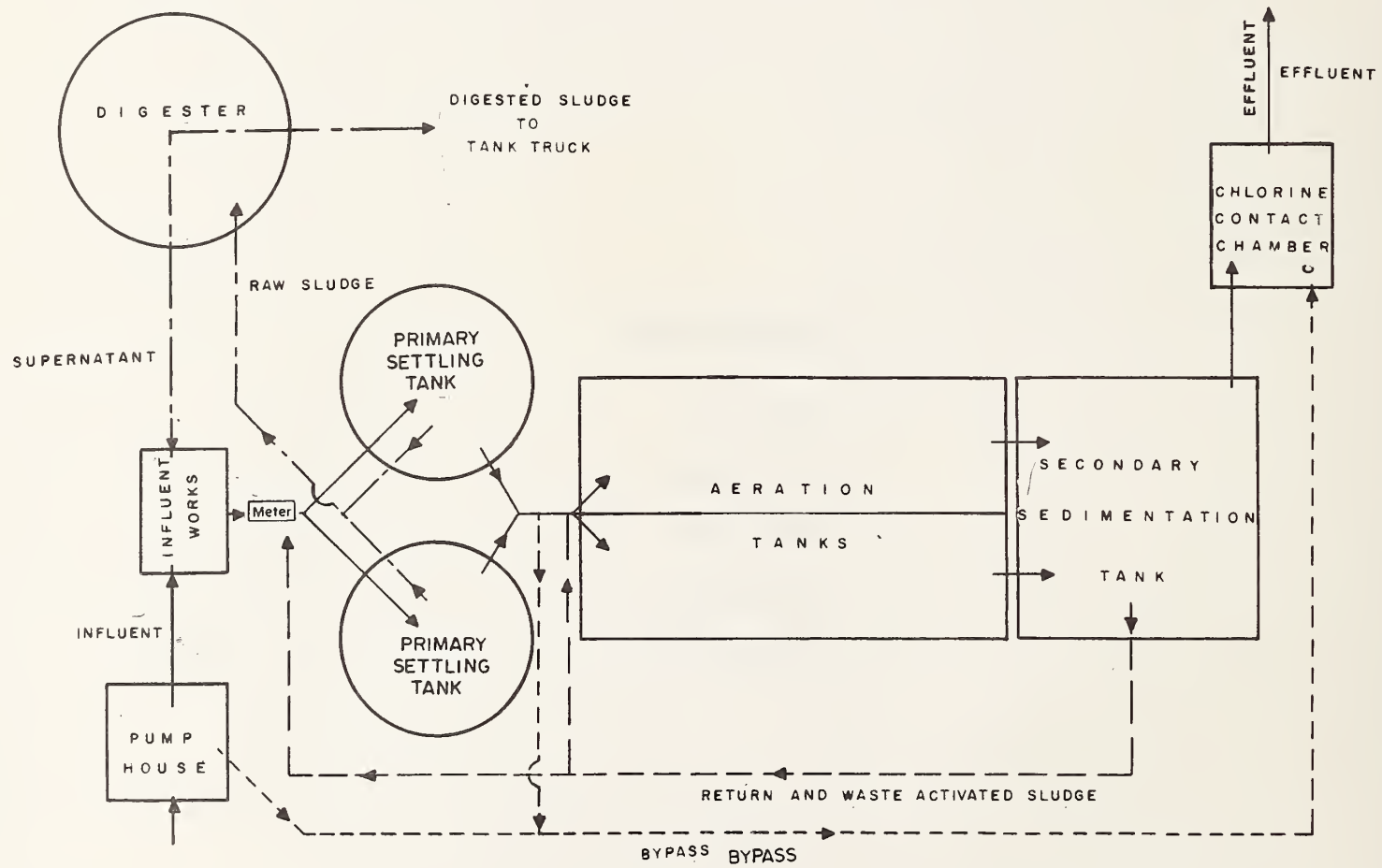
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CITY OF BURLINGTON
ELIZABETH GARDENS WPCP



DESIGN DATA

PROJECT City of Burlington
Elizabeth Gardens WPCP

PROJECT NO. 2-0028-58

TREATMENT Activated Sludge

DESIGN FLOW 0.750 mgd

DESIGN POPULATION 7,500

BOD - Raw Sewage 253 mg/l
- Removal 90-95%

SS - Raw Sewage 280 mg/l
- Removal 95%

LIFE STATION

Pumps (@ 35' tdh)

One Fairbanks-Morse 600 gpm (electric)
One Smart-Turner 250 gpm (electric)
One Smart-Turner 125 gpm (electric)
One Smart-Turner 300 gpm (gas)

PRIMARY TREATMENT

Comminution

Type: Barminutor
Size: Model B (18")

Grit Removal

Type: Air degritter (with 4 Colaflex
diffusers)
Size: 14' x 8' x 7' (avg depth)
Retention: 10 min

Primary Sedimentation

Type: Dorr
Size: Two 22' dia x 9' swd (6250 gal)
Retention: 2 hours
Loading: Surface, 980 gal/ft²/day
Weir, 5,430 gal/ft/day

SECONDARY TREATMENT

Aeration Tanks

Type: Diffused air, Single-pass
Size: Two 98' x 19½' x 12'
(44,000 cu ft or 274,000 gal)
Retention: 8.8 hours

Air Supply

Two Hoffman Cyclo Blowers
Size: 750 cfm each

Diffusers

60 Colaflex diffusers per tank

Secondary Sedimentation

Type: Dorr
Size: Two 40' x 40' x 10' swd (8,600 gal)
Retention: 2.75 hours
Loading: Surface, 470 gal/ft²/day
Weir, 4,690 gal/ft/day

CHLORINATION

W & T 200 lb/day

Chlorine Contact Chamber

Retention: 10 min

OUTFALL

- to Lake Ontario

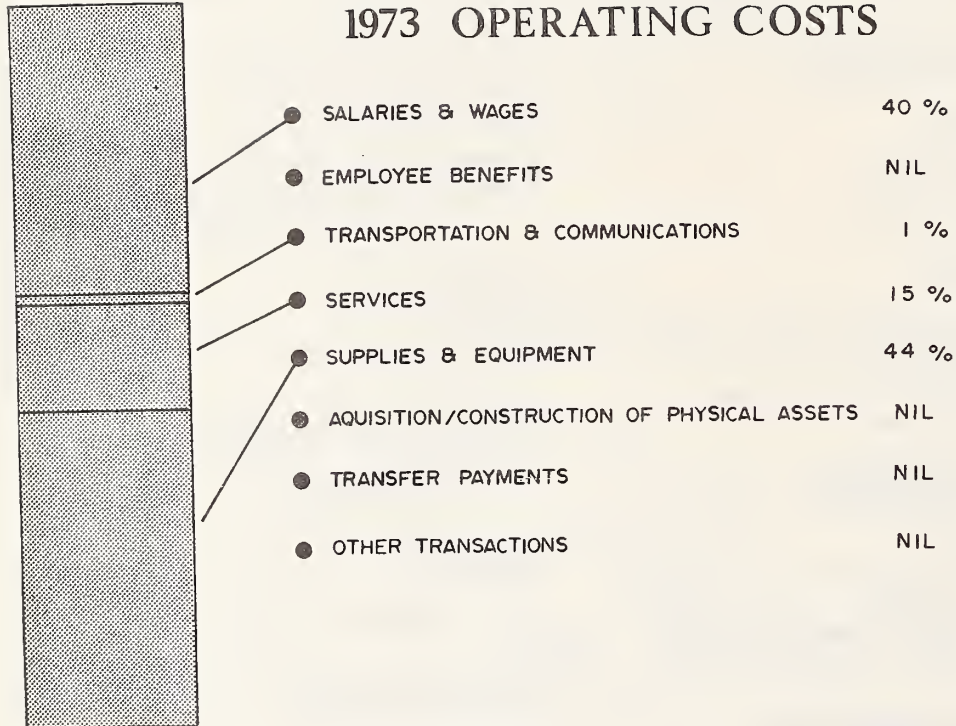
SLUDGE HANDLING

Digestion System

Type: Single-stage with one Dorr-Oliver
draft tube mixer
Size: One 45' dia x 20' swd (31,600 cu ft or
196,000 gal)
Loading: 1.6 lb/ft³/mo

ANNUAL COSTS

1973 OPERATING COSTS



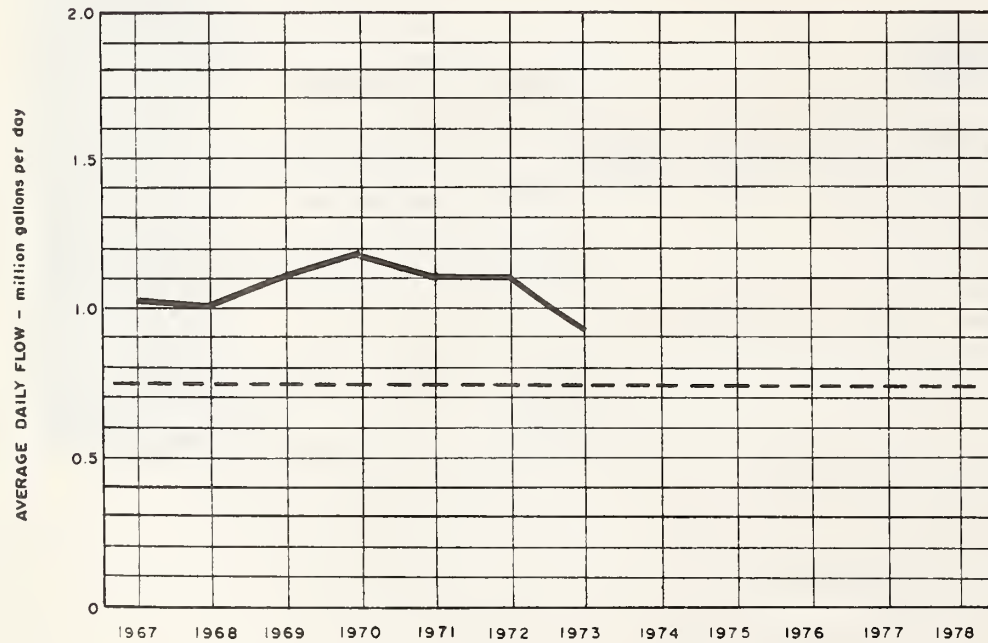
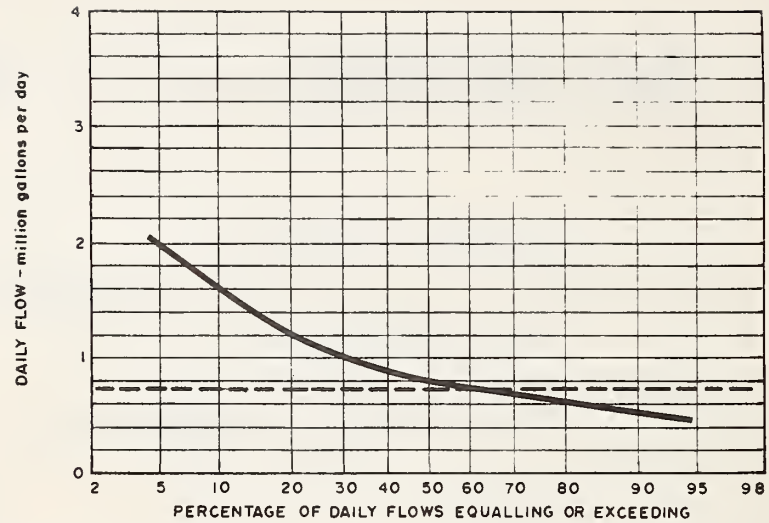
YEARLY OPERATING COSTS

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			\$/M.G.	¢/lb BOD
1968	388	\$ 22,110	57	5
1969	390	28,721	74	6
1970	431	26,161	61	5
1971	402	29,898	74	6
1972	386	26,545	69	8
1973	339	26,132	77	7

OPERATING EXPENDITURES

SALARIES AND WAGES	<u>\$10,348</u>
EMPLOYEE BENEFITS	<u>0</u>
TRANSPORTATION & COMMUNICATIONS	<u>207</u>
SERVICES	<u>4,019</u>
SUPPLIES AND EQUIPMENT	<u>11,558</u>
ACQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	<u>0</u>
TRANSFER PAYMENTS	<u>0</u>
OTHER TRANSACTIONS	<u>0</u>
TOTAL	<u>\$26,132</u>

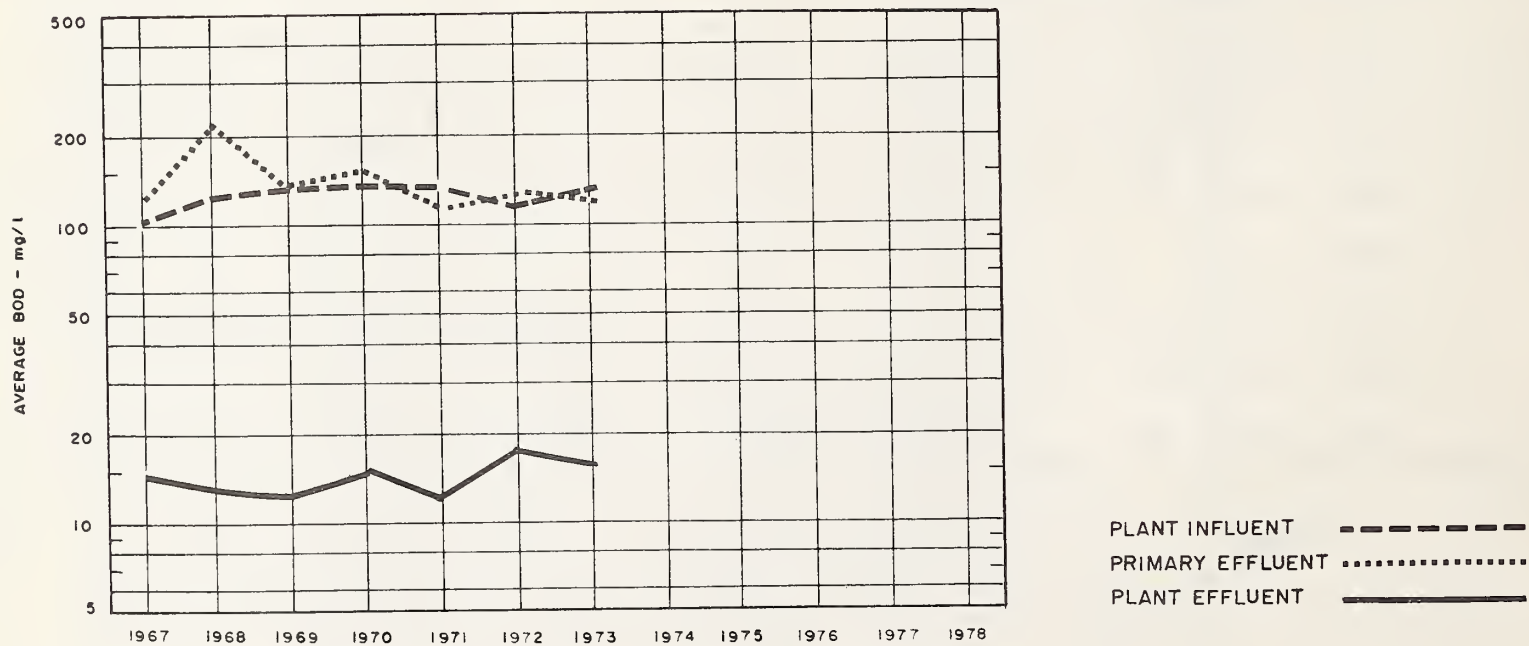
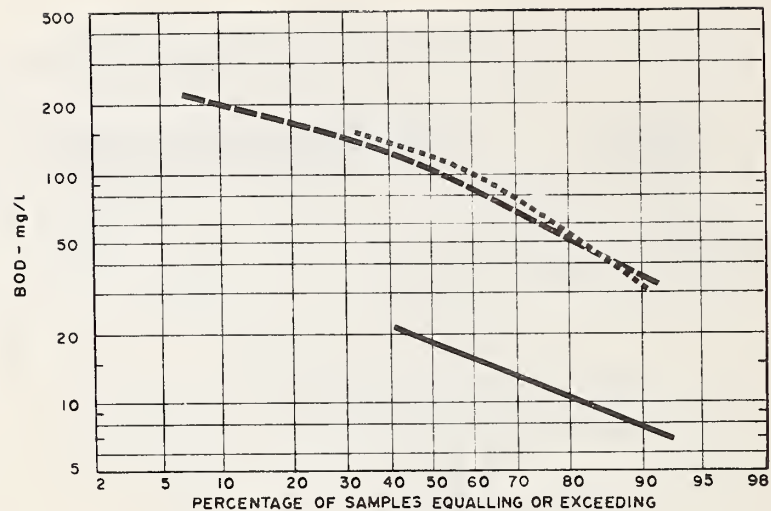
PROCESS DATA FLOWS



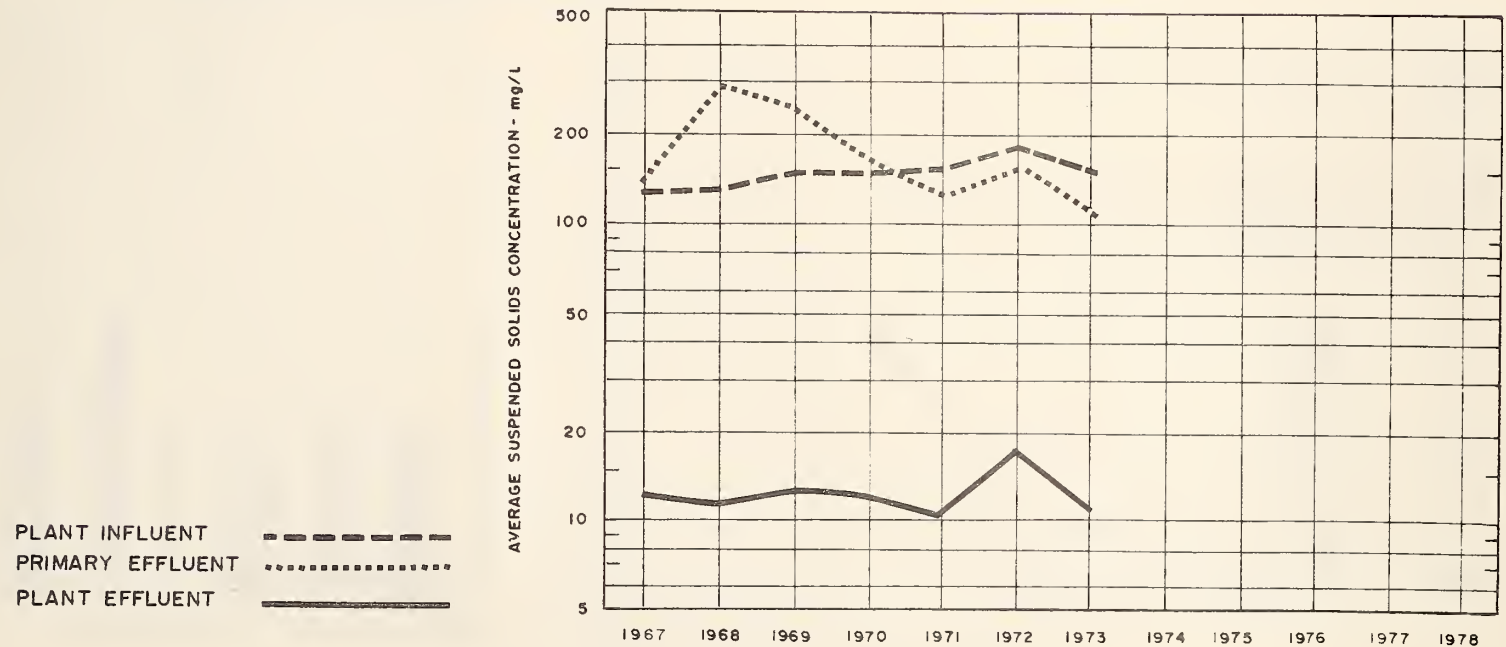
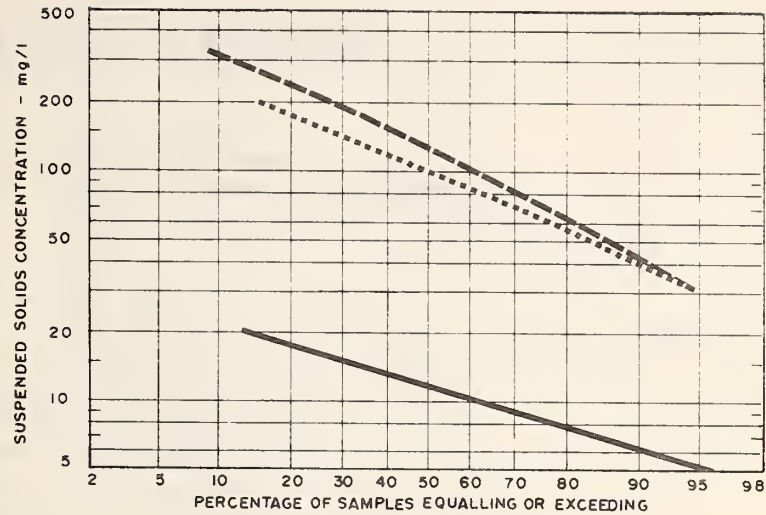
PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10 ³ pounds	mg/l	mg/l	%	10 ³ pounds	mg/l P	mg/l P
JAN	28.4	0.92	2.20	120	26	78	26.7	130	10	92	34.1	10.0	5.5
FEB	23.1	0.83	2.16	90	12	87	18.0	95	8	92	20.1	7.6	5.3
MAR	53.4	1.72	2.52	34	11	68	12.3	58	10	83	25.6	3.2	1.5
APR	32.6	1.09	2.47	40	8	80	10.4	200	10	95	62.0	2.6	1.5
MAY	26.0	0.84	1.53	130	26	80	27.0	140	8	94	33.0	9.6	5.0
JUNE	20.9	0.69	0.99	140	26	81	23.8	170	20	88	31.4	9.8	4.6
JULY	19.9	0.64	1.10	240	10	96	45.8	450	10	98	87.6	9.3	4.8
AUG	18.4	0.59	0.81	160	10	94	27.6	140	10	93	24.5	9.6	5.7
SEPT	17.8	0.59	1.15										
OCT	25.7	0.83	2.44	130	24	82	27.3	130	20	85	28.3	8.2	6.0
NOV	38.5	1.28	2.46	200	10	95	80.9	180	10	94	62.5	7.0	5.2
DEC	34.7	1.12	2.42	90	12	89	27.1	100	10	89	31.3	6.0	3.4
TOTAL	339.4	-	-	-	-	-		-	-	-		-	-
AVG.		0.93	MAXIMUM 2.52	120	16	87	29.7	150	11	93	40.0	7.5	4.4
No. of Samples	-	-	-	11	11	-	-	19	19	-	-	11	11

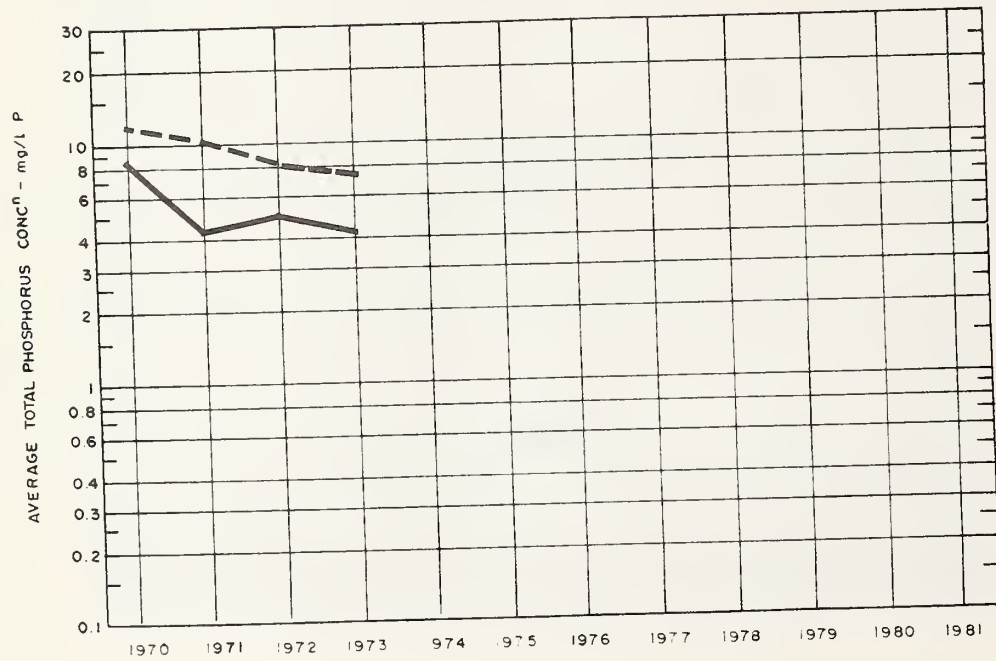
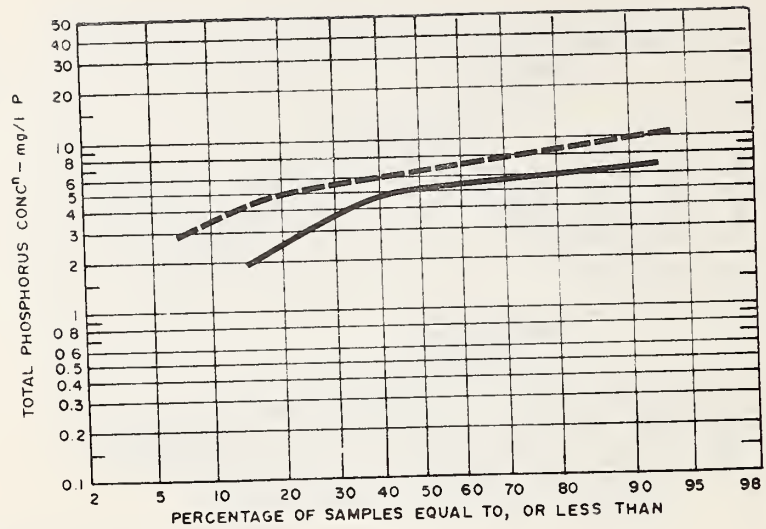
BIOCHEMICAL OXYGEN DEMAND



SUSPENDED SOLIDS



PHOSPHORUS

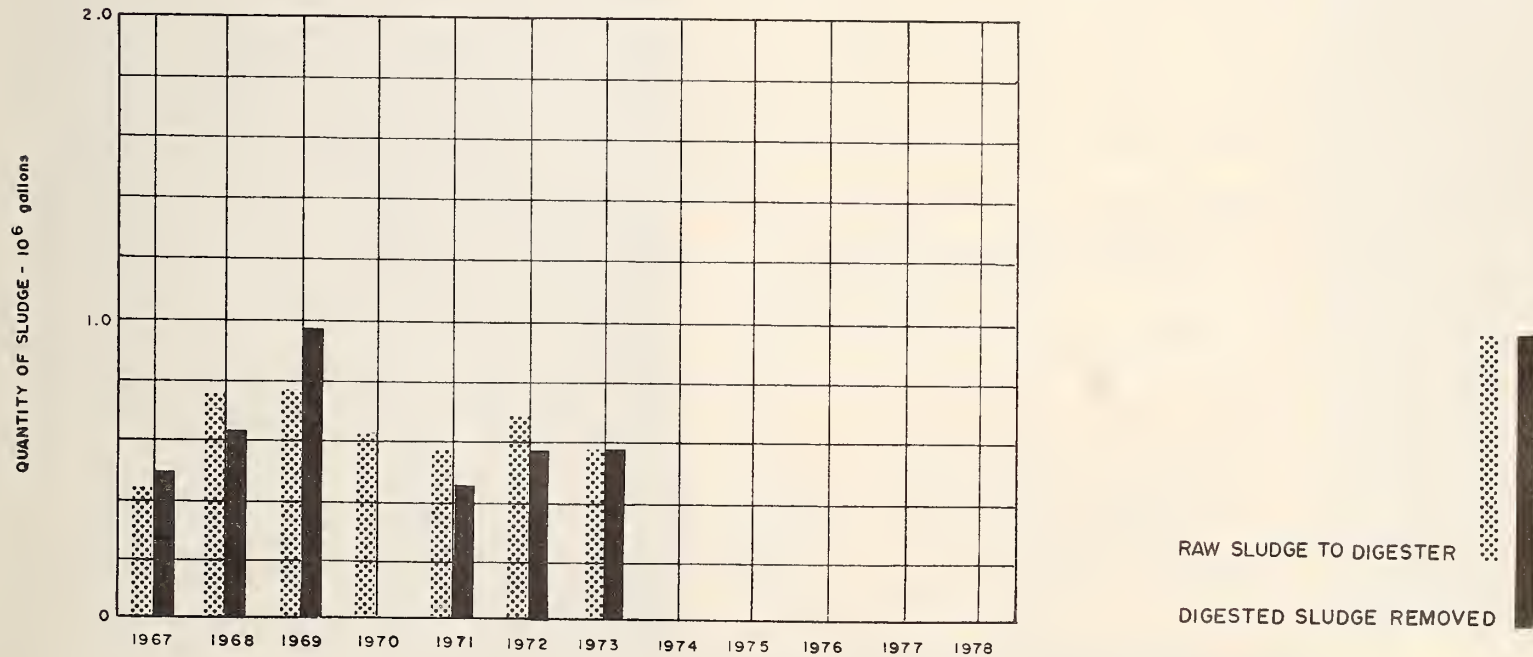
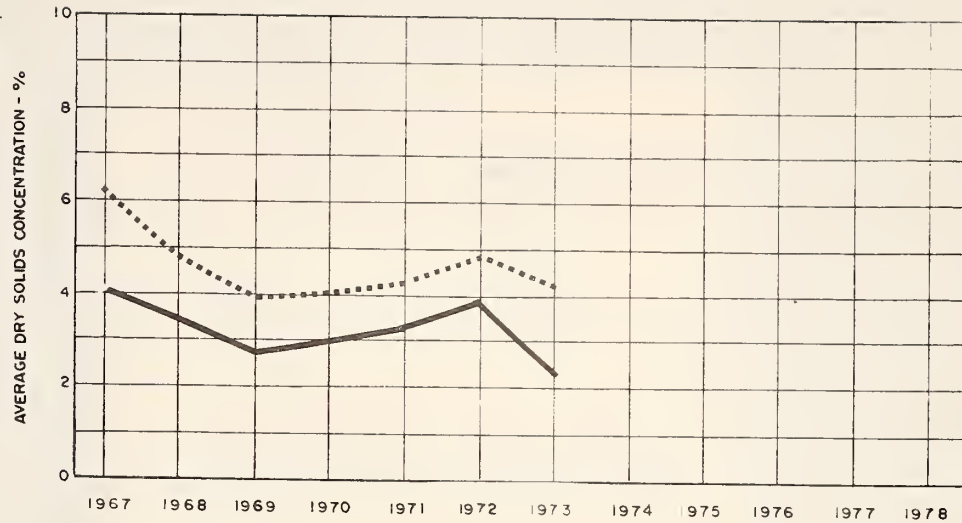


PLANT INFLUENT - - - - -

PLANT EFFLUENT —————

DIGESTION

RAW SLUDGE
DIGESTED SLUDGE ———



RAW SLUDGE TO DIGESTER

DIGESTED SLUDGE REMOVED

TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CL ₂ USED pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day ⁻¹	AIR 1000 ft ³ lb BOD	RAW SLUDGE			DIGESTED SLUDGE			SUPER- NATANT T. S. %	AMOUNT HAULED cubic yards
									QUANTITY 10 ³ gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10 ³ gallons	TOTAL SOLIDS %	VOL. SOLIDS %		
JAN	38	0		150	110	1700	0.29	0.9	63			47				278
FEB	23	0		85	80	1500	0.17	1.8	45	4.3	83	41	3.0			241
MAR	31	0		100	100	1500	0.38	0.8	31	4.2	71	36	2.0	55		205
APR	28	0		38	160	1800	0.08	3.7	40	4.3	81	34				191
MAY	34	180	3.1	110	110	1800	0.18	1.5	55	5.6	82	46				273
JUNE	26	760	3.6	120	100	1700	0.18	2.8	51			65				386
JULY	65	930	4.7	160	110	1500	0.25	2.3	53			45				269
AUG	160	780	4.2	110	160	1600	0.15	3.7	52	3.1	76	57	2.1	52		341
SEPT	8	940	5.2			3200			37			41				241
OCT	31	470	4.5	140	80	1800	0.02	2.0	59			59				352
NOV	36	0		200	90	1900	0.47	0.8	37	3.8	80	41	2.3	61		246
DEC	30	0		48	70	1700	0.11	5.4	67			76				454
TOTAL	510	3980	-	-	-	-	-	-	590	-	-	588	-	-	-	3477
AVG.	1.5 cu. ft./mil gal	790	4.2	115	107	1800	0.21	2.3	49	4.2	79	49	2.3	56		290

BURLINGTON, ELIZABETH GONS.

WATER POLLUTION CONTROL PLANT.

TD227/B87/E45/W38/1973/MOE

DATE

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